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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. _____
First Inventor or Application Identifier Garry W. Busboom
Title Lawn Mower Having Flow Control Baffles, etc
Express Mail Label No. ELO56333477US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ * Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [Total Pages 10]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the invention
 - Brief Summary of the invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 4]
4. Oath or Declaration [Total Pages 2]
 - a. ☐ Newly executed (original or copy)
 - b. ☒ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]
 - i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).
5. ☒ Incorporation By Reference (useable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ☐ Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 C.F.R. § 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
10. ☐ English Translation Document (if applicable)
11. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
 - * Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired (PTO/SB/09-12)
14. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
15. ☐ Other:
16. ☐ Other:

* NOTE FOR ITEMS 1 & 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: 08 / 784,825
Prior application information: Examiner Victor Batson Group / Art Unit: 3616

18. CORRESPONDENCE ADDRESS

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Signature	<i>Dennis L. Thomte</i>	Date	Aug 18, 1998

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P E T I T I O N

To the Commissioner of Patents and Trademarks
Washington, D.C. 20231

Your Petitioners, GARRY W. BUSBOOM and JOHN C. CRUMRINE, citizens of the United States and residents of the State of Nebraska, whose post office addresses are R. R. 3, Box 146A, Beatrice, Nebraska 68310, and 2010 Monroe Street, Beatrice, Nebraska 68310, respectively, pray that Letters Patent may be granted to them for the improvement in

A LAWN MOWER HAVING FLOW CONTROL BAFFLES AND REMOVABLE MULCHING BAFFLES

as set forth in the following specification.

Cross-Reference to Related Application

This is a continuation application of application Serial No. 08/784,825 filed January 17, 1997, entitled LAWN MOWER HAVING FLOW CONTROL BAFFLES AND REMOVABLE MULCHING BAFFLES which is a continuation-in-part application of application Serial No. 08/559,575 filed November 16, 1995, entitled HILLSIDE-STABLE POWERABLY-MOTIVATED LAWN MOWERS.

Background of the Invention

1. Field of the Invention

This invention relates to a lawn mower having multiple rotary cutting blades and more particularly to a lawn mower of the type described having a first flow control baffle positioned at the underside of the mower deck forwardly of the multiple rotary cutting blades, a second flow control baffle positioned at the underside of the mower deck rearwardly of the multiple rotary cutting blades, and further including mulching baffles removably positioned between the first and second flow control baffles which enables the mower to be easily converted from a side discharge mower to a mulching mower.

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1 are only able to be converted to a mulching mower and vice versa through the labor-intensive and time-consuming installation of mulching baffles or housings.

5 In the lawn mower of the co-pending application identified hereinabove, first and second flow control baffles are provided which are positioned forwardly and rearwardly, respectively, of the rotary cutting blades and which serve to efficiently direct the cut grass clippings towards the side discharge of the mower deck. The removable mulching baffles described in this invention are designed to cooperate with the flow control baffles described in the co-pending application.

10 It is therefore a principal object of the invention to provide an improved multiblade lawn mower.

A further object of the invention is to provide a multiblade, side discharge mower having flow control baffles and removable mulching baffles.

15 Still another object of the invention is to provide a lawn mower of the type described wherein removable mulching baffles may be quickly and easily attached to the underside of the mower deck.

Still another object of the invention is to provide a lawn mower of the type described including removable mulching baffles which cooperate with flow control baffles to define individual mulching chambers surrounding each of the rotary cutting blades.

20 Still another object of the invention is to provide a lawn mower of the type described having a flow control baffle which efficiently directs the grass clippings and air towards the side discharge of the mower deck in a manner which prevents the grass clippings and air from being directed downwardly onto the ground or turf unless the mulching baffles are mounted on the mower.

1 Still another object of the invention is to provide removable mulching baffles for a multiblade lawn mower which is comprised of a minimum number of parts and which requires a minimum number of connection points.

These and other objects will be apparent to those skilled in the art.

5 Summary of the Invention

A multiblade lawn mower is described comprising a mower deck including a top wall, a front wall, a back wall and first and second side walls which define a downwardly directed opening. One of the side walls has a discharge opening formed therein so that the mower deck discharges grass clippings from one side thereof. The grass clippings may either be discharged from the discharge opening onto the ground or into some sort of collection container, bag or hopper. A plurality of cutting blades are rotatably disposed within the mower deck and are driven by a suitable power means. A first flow control baffle is positioned in the mower deck which extends downwardly from the interior surface of the top wall of the mower deck between the cutting blades and the front wall of the mower deck. The first flow control baffle extends substantially continuously from a first location adjacent the interior surface of the side wall opposite the discharge opening to a second location adjacent the interior surface of the side wall having the discharge opening formed therein. A second flow control baffle is also positioned in the mower deck which extends downwardly from the interior surface of the top wall of the mower deck between the cutting blades and the back wall of the mower deck. The second flow control baffle includes a plurality of semi-circular baffle portions, each of which are positioned adjacent one of the cutting blades. The first and second flow control baffles define a plurality of open throat portions which are positioned between the adjacent cutting blades.

1 When the mower is used strictly as a side discharge mower, the flow control
baffles, and especially the first flow control baffle, efficiently direct the grass clippings
and air to the side discharge opening without the grass clippings being deflected
downwardly from the walls of the mower deck onto the ground. When it is desired to
5 convert the mower to a mulching mower, a plurality of removable mulcher baffles are
secured to the first flow control baffle, the second flow control baffle and the mower
deck to close the throat portions, and the discharge opening, whereby the first and
second flow control baffles cooperate, with the mulching baffles, to define a
substantially cylindrical mulching chamber around each of the cutting blades.

10 Brief Description of the Drawings

Figure 1 is a front perspective view of a lawn mower having the flow control
baffles and removable mulching baffles installed thereon;

Figure 2 is a partial top elevational view of the lawn mower;

Figure 3 is a bottom perspective view of the mower deck having the removable
mulching baffles installed thereon; and

15 Figure 4 is an exploded bottom perspective view of the mower deck of Figure 3.

Description of the Preferred Embodiment

20 The numeral 10 refers to a multiblade lawn mower upon which the invention
herein is mounted. Lawn mower 10 is shown to be a riding lawn mower, but it could
also be a walk-behind or pull-type lawn mower. Lawn mower 10 generally includes a
frame 12 having a pair of driven wheels 14 and 16 at the rear end thereof and at least
one or more caster wheels 18 at the forward end thereof. Lawn mower 10 also
includes a conventional power means, such as an internal combustion engine 20, for
driving the wheels 14 and 16 and for driving the cutting blades, as will be described

hereinafter. An operator's station 22 is provided on frame 12 to accommodate an operator. The conventional controls 24 are also provided.

Mower deck 26 is mounted on the forward end of frame 12 and, in the embodiment shown in the drawings, "floats" with respect to frame 12 in a generally conventional fashion. Mower deck 26 includes a top wall 28, a front wall 30 extending downwardly from the forward end of top wall 28, a left side wall 32 extending downwardly from the left side of the top wall 28, a right side wall 34 extending downwardly from the right side of top wall 28, and back wall 36 extending downwardly from the rearward end of top wall 28. In the embodiment shown in the drawings, right side wall 34 is provided with a discharge opening, generally referred to by the reference numeral 38, which may take any conventional shape. It should also be noted that discharge opening 38 could be provided in left side wall 32 if required or desired. Thus, mower deck 26 is a side discharge mower deck which will normally discharge the grass cuttings or clippings therefrom, for deposit on the ground, at the right side of the lawn mower or into some sort of collection container, bag, etc.

Figures 3 and 4 are bottom views of the mower deck and it can be seen therefrom that a first flow control baffle 40, constructed of a suitable metal material, is positioned between the interior surface of front wall 30 and the rotary cutting blades 42, 44 and 46 which are rotatably supported by conventional spindles or the like on top wall 28 and which are suitably driven, through a belt mechanism, or other suitable drive mechanism, by the engine of the lawn mower.

Flow control baffle 40 has one end positioned or located adjacent the interior surface of left side wall 32 at 48 and has its other end positioned or located adjacent the interior surface of right side wall 34 at 50 which is adjacent the forward end of discharge opening 38. Preferably, baffle 40 is secured to the underside of top wall 28

1 by welding. However, baffle 40 could be secured to top wall 28 by bolts or the like. For
purposes of description, assuming that three cutting blades are utilized, baffle 40
includes a first arcuate baffle portion 56 which partially extends around the blade tip
path of cutting blade 42, a first relatively straight baffle portion 58, a second arcuate
5 baffle portion 60 which partially extends around the blade tip path of cutting blade 44, a
second relatively straight baffle portion 62, a third arcuate baffle portion 64 which
partially extends around the blade tip path of cutting blade 46, and a third relatively
straight baffle portion 66.

As seen in Figures 3 and 4, a second flow control baffle 68 is also provided in
mower deck 26 and is positioned rearwardly of cutting blades 42, 44 and 46 and
10 extends downwardly from the underside of top wall 28. Baffle 68 may be either welded
to or bolted to the top wall 28 as desired. Baffle 68 is comprised of semi-circular baffle
portions 70, 72 and 74, as seen in Figure 4. As seen in Figure 4, the rear corners of
deck 26 are rounded and form continuations of the baffle portions 70 and 74. The rear
corners of the deck are referred to by the reference numerals 82 and 83, respectively.
15 If the rear corners of the corners of the deck 26 are substantially square, i.e., not
rounded, it is preferred that the outer ends of baffle portions 70 and 74 be extended, in
a semi-circular fashion, to the interior surfaces of walls 32 and 34, respectively. For
purposes of description, the flow control baffles 40 and 68 define cutting chambers 76,
78 and 80, respectively. It should also be understood that, in some cases, back wall 36
20 may be eliminated with the flow control baffle 68 forming the back wall of the mower
deck.

As cutting blades 42, 44 and 46 are rotated by the engine on the lawn mower,
the grass cuttings created by cutting blade 42 are deflected upwardly and outwardly
and strike either the interior surface of baffle portion 70, the interior surface of corner
25

1 82, the interior surface of baffle portion 56 and/or the interior surface of baffle portion 58
with those surfaces further deflecting the cuttings upwardly into the area above the
outer ends of cutting blade 42 for discharge through throat portion 84, located between
cutting chambers 76 and 78. Baffle portion 58 deflects the cuttings inwardly into the
5 path of cutting blade 44, but thereabove for the most part.

Cutting blade 44 performs similarly in cutting chamber 78 with the baffle portions
72, 60 and 62 causing the cuttings to be deflected upwardly, as in chamber portion 76,
and to be discharged through the throat portion 86, located between cutting chambers
78 and 80. Baffle portion 62 deflects the cuttings inwardly into the path of cutting blade
10 46, but thereabove for the most part.

Cutting blade 46 performs similarly in cutting chamber 80 with the baffle portions
74, 64, 66 and the interior surface of corner 83 causing the cuttings to be deflected
upwardly and along the interior surface of baffle portion 66 and to be discharged
through discharge opening 38. As seen, throat portion 86 is larger than throat portion
15 84 due in part to the larger volume of cuttings necessarily being passed through throat
portion 86.

Figures 3 and 4 illustrate the removable mulching baffles of this invention which
are referenced by the numerals 90 and 92, respectively. Baffle 90 is generally Y-
shaped and includes a base portion 94 and arcuate legs 96 and 98. Base portion 94 is
provided with an opening 100 formed therein adjacent the end thereof. Legs 96 and 98
20 are provided with openings 102 and 104 formed therein, respectively. Openings 100,
102 and 104 are adapted to receive bolts 106, 108 and 110, respectively. Bracket 111
is secured to baffle portion 72 and has an opening formed therein adapted to receive
bolt 106 to fix base portion 94 to baffle portion 72. Flow control baffle 40 has an
opening 114 adjacent the juncture of baffle portions 56 and 58 which is adapted to
25

1 receive bolt 108 to fix leg 96 to flow baffle 40 to close throat portion 84 to create a
mulching chamber surrounding cutting blade 42. One end of baffle portion 60 has an
opening 116 formed therein which receives the bolt 110 to fix leg 98 to flow control
baffle 40.

5 Baffle 92 is also generally Y-shaped and includes a base portion 118 and legs
120 and 122. Baffle 92 has openings 124 and 126 formed therein adjacent the ends of
base portion 118 and leg 120, respectively, which are adapted to receive bolts 130 and
132, respectively. The numeral 140 refers to a "blocking" member which is preferably
provided at the end of leg 122, as seen in Figure 4. Member 140 has a bracket 141
10 affixed thereto which is adapted to be bolted to top wall 28.

Mulching baffle 92 is mounted to the underside of the mower deck as follows.
Baffle 92 is positioned as illustrated in Figure 3. Bolt 130 is inserted through opening
124 in leg 118 and an opening formed in bracket 146 which is secured to the end of
baffle portion 74. Bolt 132 is inserted through opening 126 in leg 120 and through an
opening 148 provided in flow control baffle 40 adjacent the juncture of baffle portions 60
15 and 62. Bolt 143 is extended through opening 144 in member 140 and through the
opening 145. When so installed, baffle 92 closes throat portion 86 and discharge
opening 38 to create a mulching chamber surrounding cutting blade 46. It is also
preferred that discharge opening 38 be completely closed by means of plate 150 which
is bolted to mower deck 26 by suitable bolts. One end of member 140 is bolted to plate
20 150 by bolt 143 extending through opening 144 formed in member 140 and through
opening 145 formed in plate 150. The closing of the throat portions 84 and 86 also
creates a mulching chamber surrounding cutting blade 44. The forward end of member
140, by being positioned adjacent baffle 40, blocks grass cuttings, which may be
25 between legs 120, 122 and baffle 40, from passing towards the interior surface of side

1 wall 34, where the cuttings would normally be deposited on the turf in an undesirable
fashion. The forward end of member 140 directs those cuttings into the cutting path of
cutting blade 46 rather than to the area to the side of the path of the cutting blade 46.
The mulching baffles 90 and 92 are quickly and easily installed on the mower deck to
5 convert the side discharge mower deck into a mulching deck with a minimum amount of
material being required. The baffles 90 and 92 are also quickly and easily removable
from the mower deck to return the mower to its side discharge mode when desired.

Thus it can be seen that the invention accomplishes at least all of its stated
objectives.

1 We claim:

11.

A multiblade lawn mower, comprising:

5 a mower deck comprising a top wall, a front wall, a back wall, and first and second side walls defining a downwardly directed opening;

each of said front wall, said back wall, and said opposite side walls having interior and exterior surfaces;

said first side wall having a discharge opening formed therein;

said discharge opening having rearward and forward ends;

10 means operatively connected to said mower deck for moving said mower deck along the ground;

first and second cutting blades rotatably disposed within said mower deck;

power means operatively connected to said cutting blades for causing the rotation of each of said cutting blades;

15 a first flow control baffle positioned in said mower deck which extends downwardly from the interior surface of said top wall between said cutting blades and said front wall;

20 said first flow control baffle extending substantially continuously from a first location adjacent the interior surface of said second side wall to a second location adjacent the interior surface of said first side wall and adjacent the forward end of said discharge opening;

25 said first flow control baffle comprising a first arcuate baffle portion, having first and second ends, which extends from the interior surface of said second side wall partially around said first cutting blade, a first elongated and substantially straight baffle portion, having first and second ends, extending from said second end of

1 said first arcuate baffle portion, a second arcuate baffle portion, having first and
second ends, which extends from said second end of said first elongated and
substantially straight baffle portion partially around said second cutting blade;
said first elongated and substantially straight baffle portion being angularly disposed
5 with respect to the blade tip path of said second cutting blade so that the cuttings
from said first cutting blade will be deflected inwardly within the blade tip path of
said second cutting blade;
a second flow control baffle positioned in said mower deck which extends downwardly
from the interior surface of said top wall rearwardly of said cutting blades; and
said second flow control baffle including a plurality of semi-circular baffle portions, each
10 of said baffle portions being positioned adjacent the blade tip path of one of said
cutting blades;
said first and second flow control baffles defining a plurality of open throat portions
which are positioned between adjacent cutting blades.

12.

15 The lawn mower of claim 11 wherein each of said first and second flow control
baffles have spaced-apart arcuate portions which cooperate to define a semi-enclosed
cutting chamber extending partially around the blade tip path of each of said cutting
blades.

13.

20 The lawn mower of claim 12 further comprising a plurality of selectively
removable mulcher baffles which close said throat portions to define a substantially
cylindrical mulching chamber around each of said cutting blades.

14.

The lawn mower of claim 12 further comprising a plurality of selectively removable mulcher baffles which close said throat portions and said discharge opening to define a substantially cylindrical mulching chamber around each of said cutting blades.

15.

The lawn mower of claim 12 further comprising a plurality of selectively removable mulcher baffles which cooperate with said flow control baffles to close said throat portions and said discharge opening to define a substantially cylindrical mulching chamber around each of said cutting blades.

16.

A multiblade lawn mower, comprising:
a mower deck comprising a top wall, a front wall, a back wall, and first and second side walls defining a downwardly directed opening;
each of said front wall, said back wall, and said opposite side walls having interior and exterior surfaces;
said first side wall having a discharge opening formed therein;
said discharge opening having rearward and forward ends;
means operatively connected to said mower deck for moving said mower deck along the ground;
first, second and third cutting blades rotatably disposed within said mower deck;
power means operatively connected to said cutting blades for causing the rotation of each of said cutting blades;

1 a first flow control baffle positioned in said mower deck which extends downwardly from
the interior surface of said top wall between said cutting blades and said front
wall;

5 said first flow control baffle extending substantially continuously from a first location
adjacent the interior surface of said second side wall to a second location
adjacent the interior surface of said first side wall and adjacent the forward end
of said discharge opening;

10 said first flow control baffle comprising a first arcuate baffle portion, having first and
second ends, which extends from the interior surface of said second side wall
partially around said first cutting blade, a first elongated and substantially straight
baffle portion, having first and second ends, extending from said second end of
said first arcuate baffle portion, a second arcuate baffle portion, having first and
15 second ends, which extends from said second end of said first elongated and
substantially straight baffle portion partially around said second cutting blade, a
second elongated and substantially straight baffle portion, having first and
second ends, extending from said second end of said second arcuate baffle
portion, and a third baffle portion extending from said second end of said second
20 elongated and substantially straight baffle portion adjacent said third cutting
blade towards said discharge opening;

25 said first elongated and substantially straight baffle portion being angularly disposed
with respect to the blade tip path of said second cutting blade so that the cuttings
from said first cutting blade will be deflected inwardly within the blade tip path of
said second cutting blade, said second elongated and substantially straight
baffle portion being disposed with respect to the blade tip path of said third

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cutting blade so that the cuttings from said second cutting blade will be deflected inwardly within the blade tip path of said third cutting blade;

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a second flow control baffle positioned in said mower deck which extends downwardly from the interior surface of said top wall rearwardly of said cutting blades; and said second flow control baffle including a plurality of semi-circular baffle portions, each of said baffle portions being positioned adjacent the blade tip path of one of said cutting blades;

10

said first and second flow control baffles defining a plurality of open throat portions which are positioned between adjacent cutting blades.

17.

The lawn mower of claim 16 wherein each of said first and second flow control baffles have spaced-apart arcuate portions which cooperate to define a semi-enclosed cutting chamber extending partially around the blade tip path of each of said cutting blades.

15

18.

The lawn mower of claim 17 further comprising a plurality of selectively removable mulcher baffles which close said throat portions to define a substantially cylindrical mulching chamber around each of said cutting blades.

20

19.

The lawn mower of claim 17 further comprising a plurality of selectively removable mulcher baffles which close said throat portions and said discharge opening to define a substantially cylindrical mulching chamber around each of said cutting blades.

25

20.

The lawn mower of claim 17 further comprising a plurality of selectively removable mulcher baffles which cooperate with said flow control baffles to close said throat portions and said discharge opening to define a substantially cylindrical mulching chamber around each of said cutting blades.

Abstract of the Disclosure

A multiblade lawn mower including a mower deck having a plurality of cutting blades rotatably disposed therein. A first flow control baffle is positioned in the mower deck between the cutting blades and the front wall of the mower deck and extends substantially continuously between the sides of the mower deck. A second flow control baffle is positioned in the mower deck rearwardly of the cutting blades. The first and second flow control baffles include a plurality of semi-circular baffle portions which define a plurality of open throat portions therebetween. A plurality of selectively removable mulcher baffles are positioned in the mower deck to close the throat portions, thereby defining a substantially cylindrical mulching chamber around each of the cutting blades.

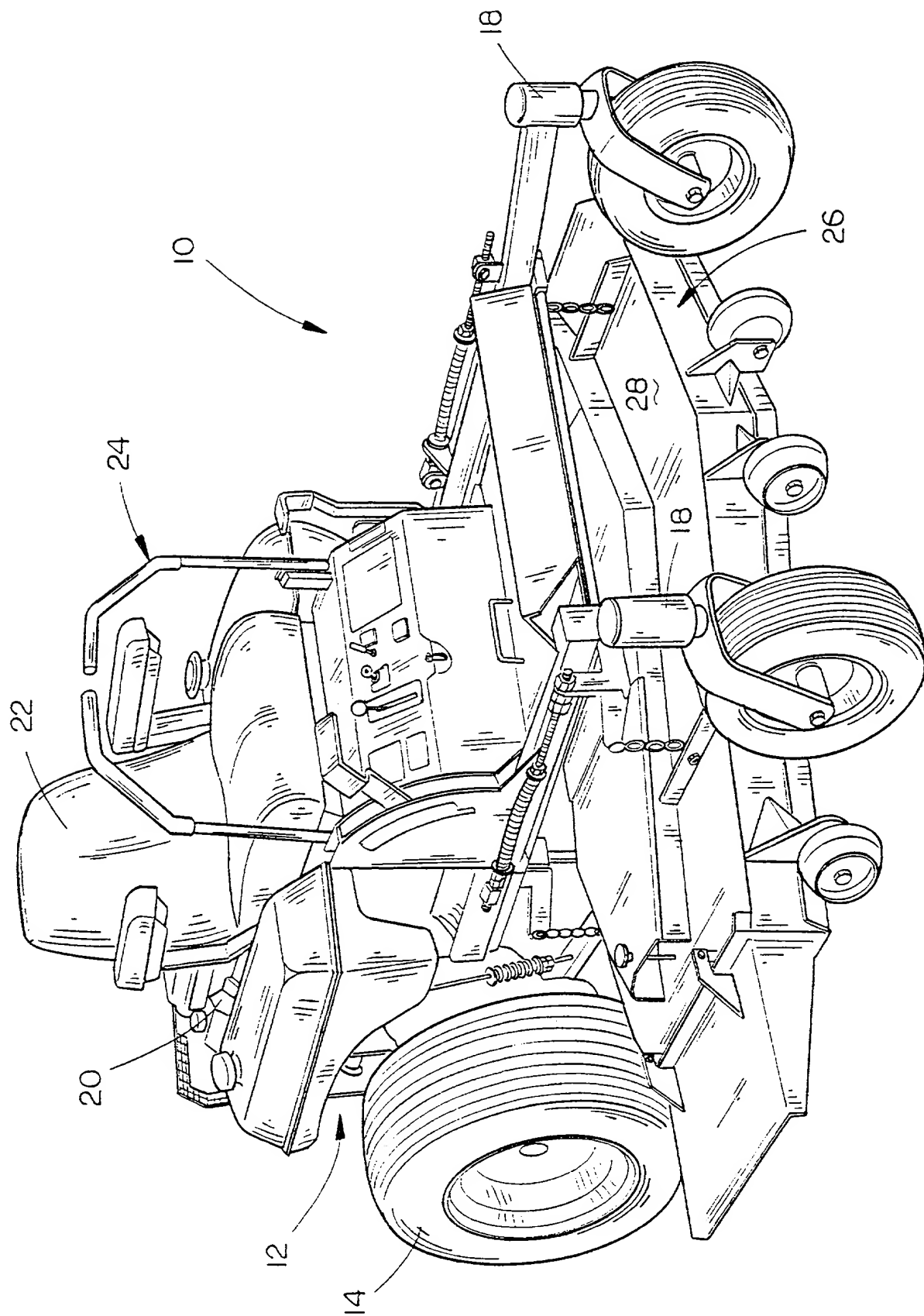


FIG. 1

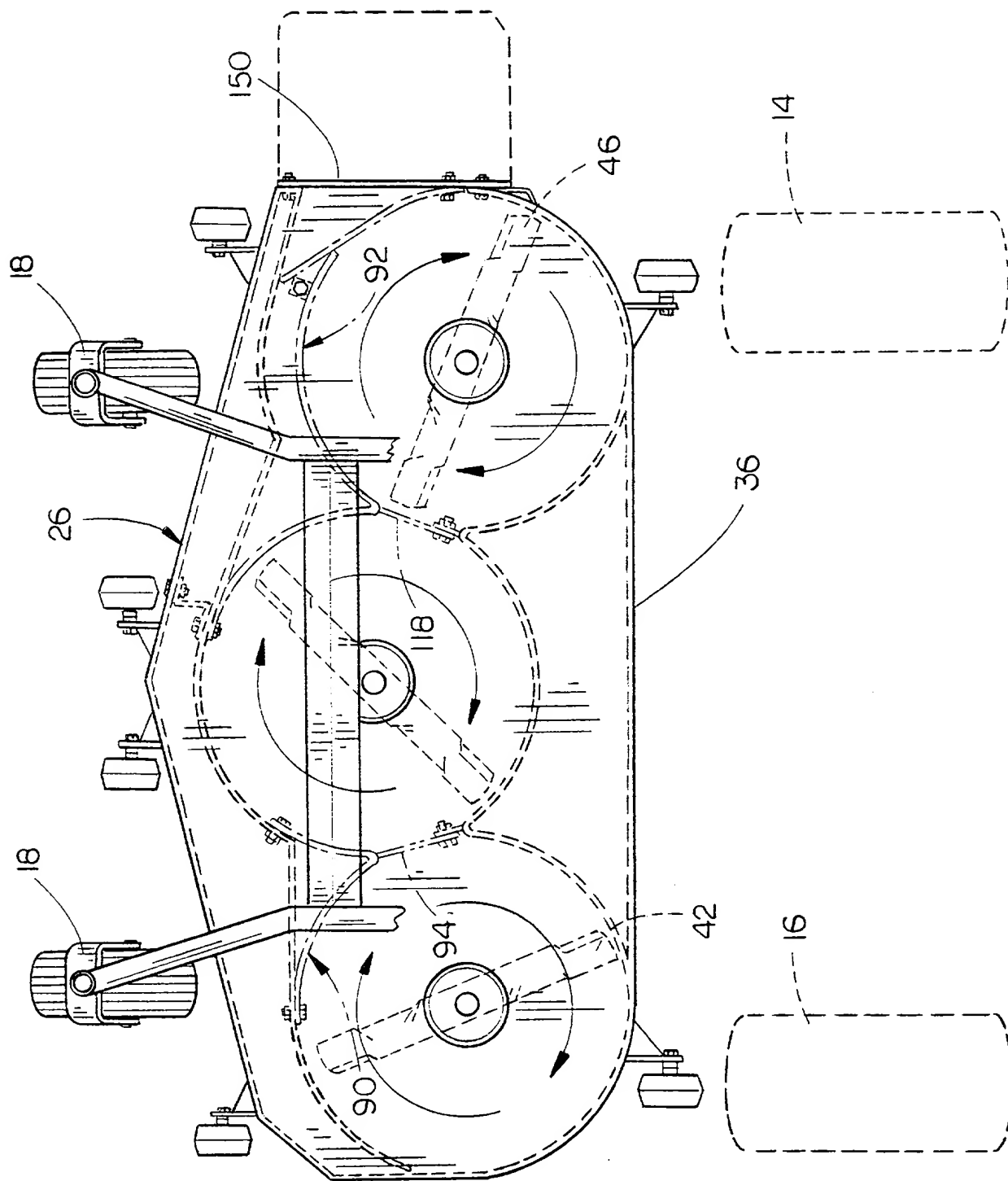


FIG. 2

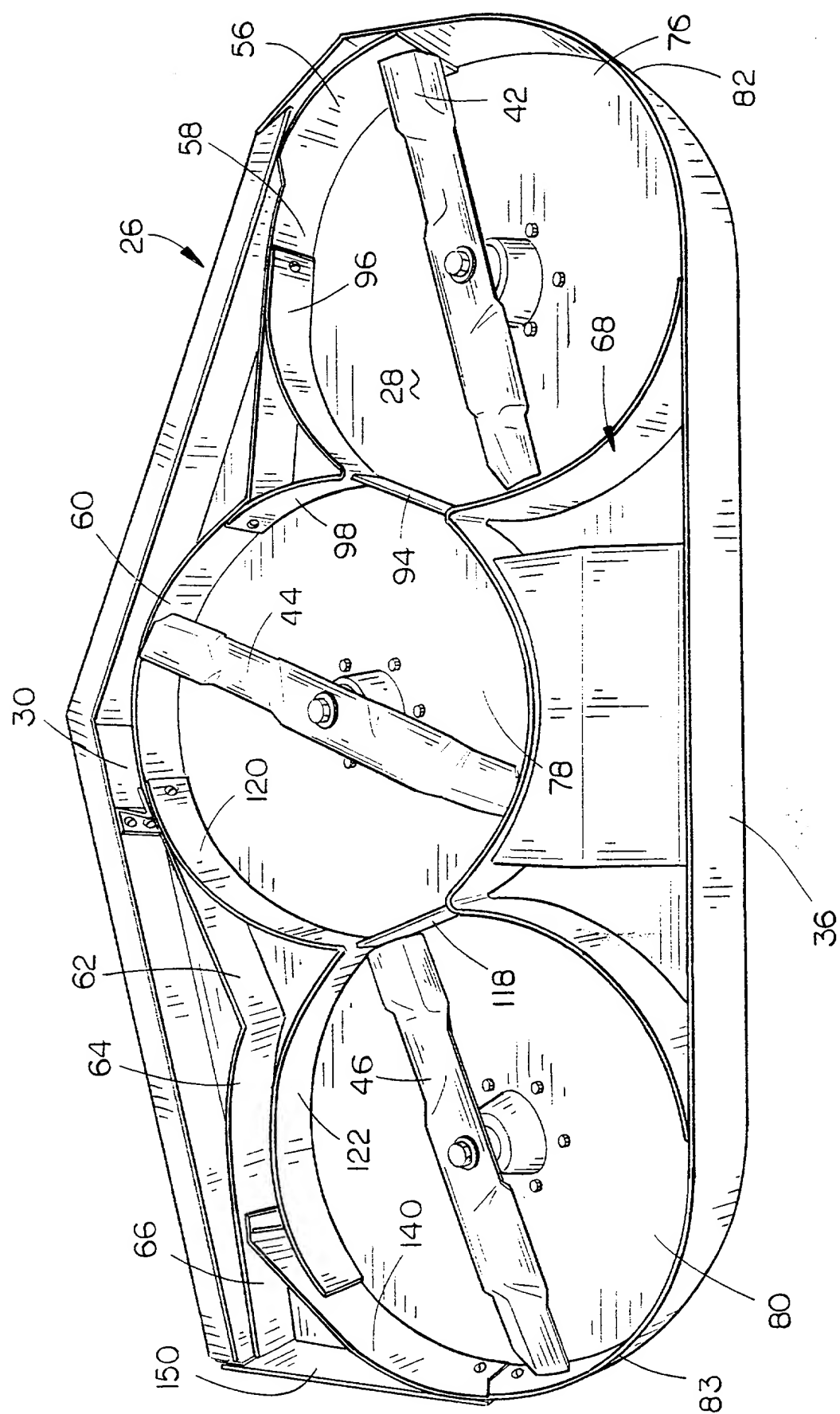


FIG. 3

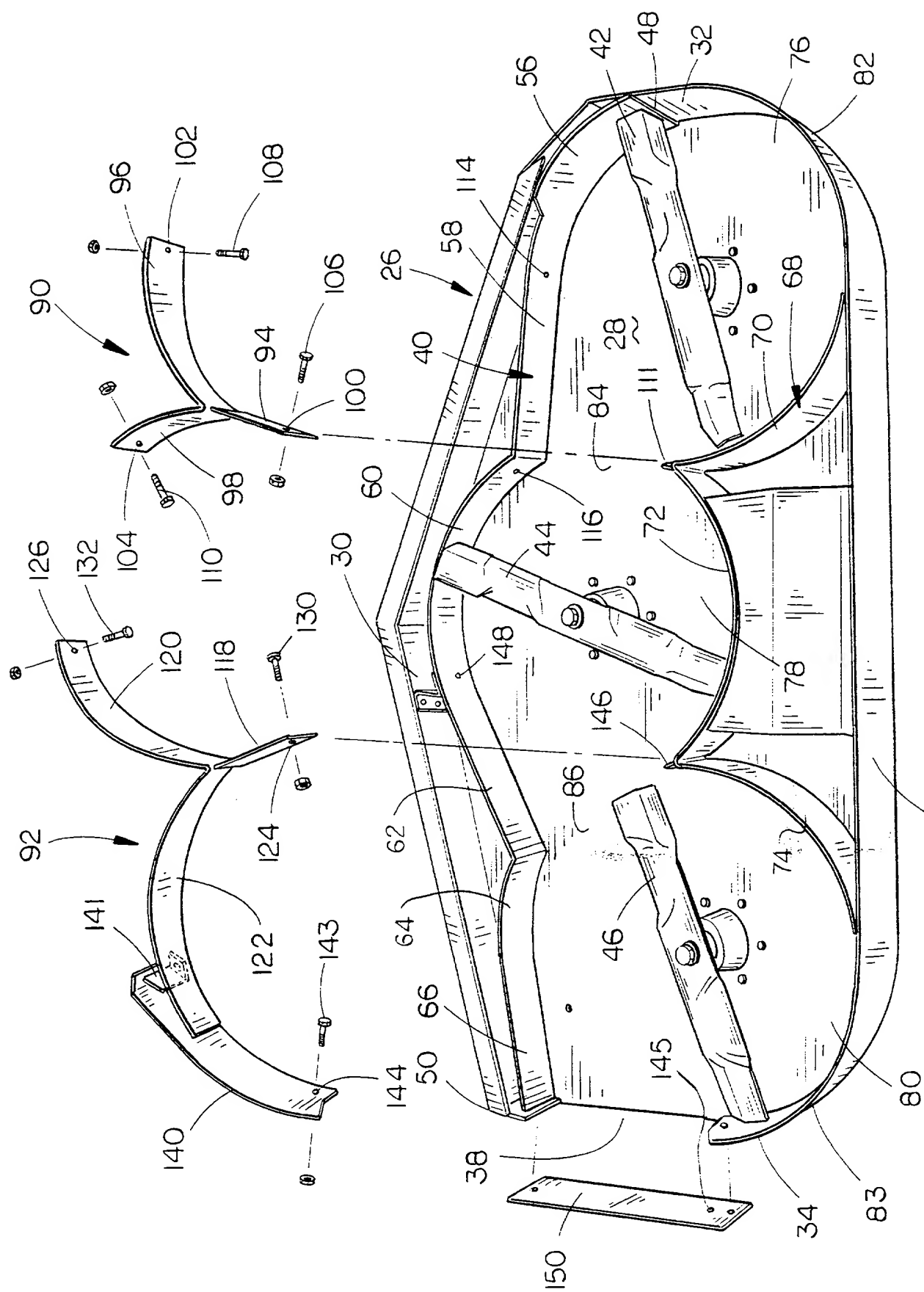


FIG. 4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

1
GARRY W. BUSBOOM and JOHN C. CRUMRINE, the above-named petitioners,
declare that they are citizens of the United States with post office and resident
addresses of R. R. 3, Box 146A, Beatrice, Nebraska 68310, and 2010 Monroe Street,
Beatrice, Nebraska 68310, respectively; that they verily believe themselves to be the
original, first, and co-inventors of the subject matter which is claimed and for which a
5 patent is sought on the invention entitled A LAWN MOWER HAVING FLOW
CONTROL BAFFLES AND REMOVABLE MULCHING BAFFLES described and
claimed in the annexed specification; that they do not know and do not believe that the
same was ever known or used in the United States of America before their invention
thereof or patented or described in any printed publication in any country before their
invention thereof, or more than one year prior to this application; that the invention has
not been patented or made the subject of an inventor's certificate issued before the
date of this application in any country foreign to the United States of America or an
10 application filed by them or their legal representatives or assigns more than twelve
months prior to this application; that they have reviewed and understand the contents
of the above-identified specification including the claims, as amended by any
amendment specifically referred to in the oath or declaration; that they acknowledge
the duty to disclose information which is material to the examination of this application
in accordance with Title 37, Code of Federal Regulations 1.56(a); and that no
application for patent or inventor's certificate on this invention has been filed by them,
or their legal representatives or assigns in any country foreign to the United States of
America except as identified below.

15 None.

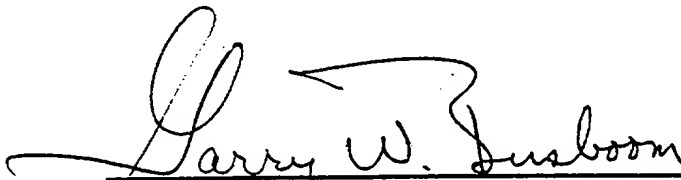
And they hereby appoint ZARLEY, McKEE, THOMTE, VOORHEES & SEASE,
comprising Donald H. Zarley, Registration No. 18,543; Bruce W. McKee, Registration
No. 19,651; Dennis L. Thomte, Registration No. 22,497; Michael G. Voorhees,
Registration No. 25,715; Edmund J. Sease, Registration No. 24,741; Mark D. Hansing,
Registration No. 30,643; Kirk M. Hartung, John A. Beehner, Registration No. 27,114;
Registration No. 31,021; Mark D. Frederiksen, Registration No. 31,357; Daniel J.
Cosgrove, Registration No. 36,770; Michael R. Crabb, Registration No. 37,298; Heidi
20 Sease Nebel, Registration No. 37,719; Wendy K. Hartung, Registration No. 39,703;
and Bruce A. Johnson, Registration No. 37,361, 801 Grand Avenue, Suite 3200, Des
Moines, Iowa 50309, telephone: 402-392-2280, as their attorneys to prosecute this
application and to transact all business in the Patent Office connected therewith.

The undersigned petitioners further declare that all statements made herein of
their own knowledge are true and that all statements made on information and belief
are believed to be true; and further that these statements were made with the
knowledge that willful false statements and the like so made are punishable by fine or
25

1 imprisonment, or both, under Section 1001 of Title 18 of the United States Code and
that such willful false statements may jeopardize the validity of the application of any
patent issuing thereon.

5 Date

01/15/97



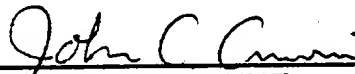
GARRY W. BUSBOOM

R. R. 3, Box 146A

Beatrice, NE 68310

10 Date

1/15/97



JOHN C. CRUMRINE

2010 Monroe Street

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